REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the Office Action of December 2, 2005 relating to the above-identified application.

Claims 2 and 5 have been amended to define the respective products in terms of the method for producing same.

Applicants also confirm the election of the claims identified as Group II and will request rejoinder of all withdrawn claims upon an indication of allowability of the product claims.

A new Abstract is filed herewith.

The rejection of Claims 2-4, 8, 10, 18 and 20 under 35 U.S.C. § 103(a) in view of *Klasen, et al.*, US 5,480,626, (*Klasen*) in view of *Bush*, US 5,236,992, (*Bush)* is traversed and reconsideration is respectfully requested.

The present invention is directed towards the problem of improving flow and storage properties of carbon black pellets while at the same time retaining sufficient dispersability to permit good dispersions. Thus, the present invention seeks to achieve a balancing of hardness and softness in carbon black pellets.

The cited references do not teach or suggest the subject matter defined by the rejected claims.

Klasen claims a process using a ring collar mill resulting in granulated solids having a "very narrow particle size distribution and are distinguished by good flowability and good dispersability...".

It is at least a three step process: a powder is mixed in a mixer with moisture, binders, etc., then compressed in a ring collar mill and rounded in an extra step. In the present

application, a process using a ring layer mixing granulator, producing the desired beads (pellets) in one step is described.

In his abstract, *Klasen* describes his invention as:

> A method for the production of spherical granulated materials from powdered solids and the granulated materials produced by it are disclosed. The method is characterized in that the powdered solids are moistened, possibly together with the usual binders, flow agents and plasticizers for the compression of solids, by the addition of a corresponding quantity of liquid and mixing smoothly in a mixer; they are then compressed with a ring collar mill into cylindrical agglomerate and then rounded in a rounding unit with wrinkle washer. The granulated solids thus produced have a very narrow particle size distribution and are distinguished by good flowability and good dispersability, depending on process controls.

Klasen is entirely silent with respect to the process conditions recited in Claim 2; namely, the nozzle configuration with respect to the flow of carbon black.

The Office Action alleges that it would have been obvious to use the carbon black of *Bush* in the *Klasen* process. Applicants submit that even if that were to be carried out, the resultant product would not be the same or similar to the products claimed herein.

Bush refers to the production of carbon black with certain intrinsic properties as surface area (iodine or CTAB number), structure properties (DBP, CDBP) and primary particle size distribution (tint).

These properties are called intrinsic because they are formed in the carbon black reactor as described by *Bush* (and many others) at temperatures above 1000° C. After the carbon black leaves the reactor, it is almost impossible to change these properties.

Bush found a certain combination of surface area, structure and primary particle size which offers, after it has been incorporated in the rubber, certain advantages.

Bush does not describe how the carbon black is treated (pelletized) after it leaves the reactor nor does he describe how it is handled (conveyed) before it is incorporated in the rubber. Additionally, he does not claim any influence on dispersion of the carbon black in the rubber. Hence, there is no teaching of the limitations in Claim 2 whereby the desired carbon black pellets of this invention are produced.

Faced with the problem of balancing hardness with good dispersability, one skilled in the art would not find anything in either or both cited references which would suggest that there would be an advantage or benefit to producing the carbon black pellets as defined herein. The improvement in conveying the resulting carbon black pellets could not have been predicted.

Applicants respectfully submit that the references do not render the claimed invention *prima facie* obvious.

The rejection of Claims 5-7, 9, 11, 19 and 21 under 35 U.S.C. § 103(a) in view of *Klasen* taken with *Vogler, et al.*, US 6,231,624, (*Vogler*) is traversed and reconsideration is respectfully requested.

Klasen has already been discussed above and the remarks there apply here as well.

Vogler describes a process for the dry granulation of powdered carbon black in special equipment. The innovation is the improved granulator, which is normally used for wet granulation. However, *Vogler* describes dry granulation process, where a small amount of additives might be added. This is clearly different from the process of the present invention with

moisture contents from 35 to 60 wt% in the present application; see [0024]. Nothing in *Vogler* would lead a person skilled in the art to go contrary to his teachings and use a wet process.

Vogler quotes individual bead hardnesses in the dry process of approximately 0.01 to 0.06 N (table 2-6) in comparison to applicants' process with hardnesses of 16 to 25 g (table 2: 0.157-0.245 N). This difference shows clearly that the pellets achieved by *Vogler* are softer; they are supposed to be used in low viscosity applications and a pneumatic conveying is not possible. In contrast, the pellets achieved in the present application are intended to be used in rubber formulations and are going to be conveyed in a pneumatic system. The *Vogler* products and those of the present invention are clearly not interchangeable.

Vogler claims that "Wet granulated blacks generally also have a higher dispersion hardness than dry granulated carbon blacks due to their higher bead hardness. They are therefore mainly used in the rubber industry. Wet granulated carbon blacks can be efficiently dispersed in highly viscous rubber materials. Their bead hardness means that the mixture is easy to transport in pneumatic feeding units". See, col. 2, line 61, et seq. This quotation reflects the common opinion at the time, thus confirming the innovation of applicants' invention which shows that high bead (or pellet) hardness is not mandatory to achieve good conveying properties.

Neither reference, nor the combination thereof, would suggest any reason for a person skilled in the art to combine the reference teachings. And, even if they were somehow combined, the resulting composite would not lead to the parameters expressed in the claims herein, nor to the expectation of the benefit obtained by the present invention. Nothing in the combination of references would suggest that an improvement in conveying could be achieved by applicants' products. Because of the unique method by way they are prepared as described in

this application, the resulting carbon black pellets possess unique properties whereby an improvement in performance is obtained.

Attention is invited to the comparative data of record beginning on page 9. The dense flow transport test results are shown in Figures 2-10 and are discussed beginning on page 13. For example, a comparison between Figures 2 and 3 shows that the comparison carbon black 1 requires a high air velocity for transport in comparison to the carbon black 2 of the invention. Thus, the carbon blacks of the present invention demonstrate stable transport conditions.

Note that the end result is, as pointed out on page 14, paragraph [0054], that a higher transport capacity can be achieved.

These beneficial results could not have been predicted from the cited prior art.

The following table prepared by applicants provides a summary of the issue presented in this application and points out the distinction that could not have been foreseen by those skilled in the art from the cited references.

Carbon Black formation in the reactor-Temperatures above 1000°C		**Bush, et al.** Describing certain reactor conditions to achieve carbon black with special surface area, structure, etc.	
Beading process	**Vogler, et al.** Describing a dry granulation (beading) process in an equipment normally used for wet granulation (ring layer mixing granulator	**Klasen, et al.** Describing beading in multistep process using a ring collar mill.	**Present Application** Describing a wet granulation process (ring layer mixing granulator) with exact defined process conditions
Product/Result in the rubber industry	Dry, soft beaded carbon black, cannot be conveyed pneumatically, is not used in the rubber industry	New process – no new product	Harder carbon black beads with improved dispersion and conveying properties

In view thereof, applicants respectfully submit that the combination of references does not create *prima facie* obviousness of the claimed invention.

Favorable action at the Examiner's earliest convenience is respectfully requested.

Respectfully submitted,

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